Extra help falling bodies

1. A ball is dropped from rest and falls a distance of 5 m. How long is the ball falling? (draw a diagram of the situation)
   1. What is the height the ball falls?
   2. What is the acceleration of the ball? (remember the sign)
   3. What is the formula to use to relate height (position), time and acceleration? write it here
   4. Substitute your values and solve for t.
2. A ball is dropped from rest and falls a distance of 6.5 m. How long will it fall and how fast will it be moving when it hits the ground?
   1. Draw a diagram and label your known values.
   2. Find an equation that allows you to find time and involves what you know.
   3. Substitute values into this equation and solve for time.
   4. Find an equation that will allow you to find final velocity using the time from above?
3. A ball is thrown vertically upward from the ground with a velocity of 22 m/s. Determine how high the ball will rise above its release point, and how long it will take to get to that height.
   1. Draw a diagram and label known information. Let x0 = 0
   2. Describe what will happen to the ball as time goes on?
   3. Considering this, what will the final velocity of the ball be as it goes UP?
   4. Using that, find an equation that will allow you to calculate the max height above the release point.
   5. Find the time it will take for the ball to reach that height.
4. A student throws a ball vertically upward from a 5.0 m tower with an initial velocity of 15 m/s. Assume the ball will go up, and then come back down all the way to the ground. Find the maximum height that the ball reaches, the time that the ball is in the air, and the final velocity of the ball as it hits the ground.
   1. Draw the diagram and label the known things for the upward flight.
   2. Find the time the ball will take to stop.
   3. Find the height that the ball reaches,
   4. Find the time to fall to the GROUND
   5. Use this to determine the velocity that the ball will have when it hits the ground
   6. Add the two times to determine the total time